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EXPLOSIVES SAFETY IN THE NATO ENVIRONMENT

ABSTRACT

This presentation consists of a summary of the current situation regarding weapons safety operations in United States Air Forces in Europe (USAFE). It will address some differences in national (U.S.) versus NATO criteria, potential impacts of recent nationalistic movements, problems with enforcement of U.S.-only rules, and proposals on how to redress the current difficulties.

The current situation regarding U.S. explosives and munitions in Europe is the result of the U.S.-NATO response to the massive Soviet-Warsaw Pact military build-up of the early 1980s. This period saw a growth of collocated operating bases (COBs), expansion of the prepositioning of munitions in support of the concept of forward deployment, and an exacerbation of the problem of already limited real estate to accommodate expanded base facilities, enlarged missions, and greater quantities of munitions required in support of higher sortie rates tasked and able to be supported. Introduction of improved hardened aircraft shelters (HASs) and other standard NATO facilities contributed to the complexity of explosives site planning in that no mutually-agreed upon criteria existed to determine acceptable explosives quantity-distance (Q-D) separation criteria between these facilities and associated explosives operations, or between them and non-associated exposures. The introduction of air base operability considerations highlighted the situation which was evolving, in that it soon became evident that past siting practices had created numerous "two-for-one" targeting opportunities and allowed our own explosives to hazard other of our own operations.

Currently, USAFE is engaged in precisely defining the number and types of explosives hazards through the risk assessment program for commanders. Other initiatives include supporting the insensitive munitions program, supporting the explosives testing program, encouraging and working toward a theater-wide approach to off-base explosives site planning (especially at railheads and waterports), and working to devise munitions storage approaches and operating procedures which will minimize Q-D separation requirements, provide a larger margin of safety, and ensure our capability to rapidly build-up/generate munitions in support of contingency operations.

Projections of future requirements are driving current efforts. Some of the future requirements we are preparing to support

include possible continued positioning of munitions at COBs, reduction of in-theater munitions maintenance personnel, fewer main operating bases (MOBs) with fewer wings, fewer aircraft, increased reliance upon NATO for support and probable major munitions releveling/redistribution using both overland (rail and truck) and over water transportation.

BACKGROUND:

During the early 1980s, there was a significant mission enlargement in terms of number of airframes assigned to existing bases and an increase in the numbers and types of munitions assigned to support them. From 1977 to 1985, the number of waivers and exemptions increased from 64 to 681, and, eventually, to nearly 800. This increase was driven by the necessity to quickly field the Ground Launched Cruise Missile (GLCM), to increase the percentage of prepositioned munitions which would be located at over 90 COBs, MOBs, or forward operating locations (FOLs), and to increased Q-D separations resulting from Distant Runner testing. In the effort to protect airframes, related equipment, and munitions, many types of facilities normally involving munitions operations were approved with zero or very low explosives weight. This produced HASs which could not accommodate sortie-required munitions and severely impacted non-related facilities within the Q-D arc of these potential explosives sites (PESs). Not only were mission areas impacted, but services and facilities normally located on CONUS air bases could not be constructed due to their proximity to these PESs. The real estate available on most NATO bases was inadequate to accommodate both living/recreation areas and mission areas. Not only were on-base areas constrained, but off-base civilian areas were impacted as well. Since additional real estate was not readily available, the solution was to waive or exempt on-base exposures and seek "restrictive easements" or exemptions to off-base exposures. The result was an astronomical growth in waivers and exemptions and an increased level of risk in on-base munitions operations as more and more dissimilar operations were consolidated within a relatively confined area. As the use of exceptions to Q-D rules became more and more widespread, the awareness of risks associated with their use appeared to decline. The exception had become the rule. This situation reached a climax in about 1985 when, following an Air Force Inspection and Safety Center (AFISC) explosives safety staff assistance visit in 1983, the Department of Defense Explosives Safety Board conducted a periodic survey. This survey highlighted the serious state of explosives operations and established a baseline upon which command actions to correct previous expedient measures had been based. Also in the 1983 - 1985 period, the explosives testing

program was initiated to seek ways to improve the accuracy of and, where possible, reduce Q-D separations which unnecessarily constrained operations which could be safely conducted within the vicinity of explosives clear zones (Tab 5), and to attempt to develop explosives fillers and munitions which would be less sensitive to unintentional initiations. One of these programs was Have Block.

When the Have Block Program was initiated, USAFE suggested use of the International Shipping Organization (ISO) container and the Have Block pallet as a means of placing munitions at, or near, aircraft shelters. It was determined that this concept was inadequate and flawed. Although the diverter theory was valid, it was not operationally feasible as it required too much storage space, thus off-setting many of the intended benefits. The interim Have Block pallet, proposed for use within munitions storage igloos, was rejected because it did not allow use of maximum igloo volume. It was determined (in about 1985) that buffered storage provided greater benefits. It has subsequently been determined that buffered storage is beneficial in a bulk storage environment, but that it creates many restrictions in an operational environment.

The munitions testing program was beginning to be formalized in 1985. Tests initially proposed included AIM-7 with WAU-17 warhead for propagation both in and out of all-up-round (AUR) containers, Durandal in aircraft shelters, General Purpose (GP) bomb propagation to missiles in AUR containers stored in igloos, validation of minimum required distances for separately-packed components by subjecting them to explosives in quantities needed to build complete rounds, security police munitions in armory configurations, each munition in its various environments (e.g., transport, storage, in HAS, in open built-up areas), validate service life restrictions on unpackaged components to determine whether there is a reliability impact by having more pre-built bombs, all missiles (AGM-45, AGM-78, AIM-120, AGM-65, AIM-9) both in and out of their AUR containers. As early as July 1985, NATO countries were asking for results of the explosives testing program. They appeared to be willing to be more flexible in their national rules based on findings we had made to date. Tests at Hill AFB, Utah, were designed to determine if GP bombs cause cluster bomb units (CBUs) to detonate completely, or whether only part of the CBU contributes to the explosion; if CBUs placed between adjacent stacks of bombs prevent propagation between stacks; if inert items such as fins are placed between adjacent stacks of bombs, will prevent propagation? Conclusions indicated that (a) GP bombs normally cause CBU detonation, but specific nose-tail alignment of CBUs in relation to the bombs may

prevent some CBUs from exploding; (b) CBUs in wooden crates provide a buffer which prevents propagation between bomb stacks about 25% of the time, while CBUs in metal containers prevent propagation about 50% of the time; (c) inert items between stacks of bombs prevent propagation between stacks; (d) 20mm ammunition/explosives bomb components reduce stack-to-stack propagation to a large extent; (e) use of metal fuze well covers greatly reduces a bomb's susceptibility to propagate; (f) fuzed bombs also more effectively reduce propagation; (g) current fuzes effectively withstand blast overpressures and fragments from a 21,000 lbs net explosives weight (NEW) explosion. These findings led to the following:

Reduced Q-D between munitions storage and overseas runways/ taxiways from K30 to K4.5. Adopted by NATO.

Reduced GLCM Q-D based on insensitive high explosives (IHEs).

Reduced Q-D for 20/30mm through DDESB approval of modular storage concept.

Reduced combat aircraft-related functions from K40 to K18.

Allowed use of lower Q-D for small numbers of bombs.

Eliminated Q-D for class 1.2 CBUs and 20/30mm ammunition in shelters.

Reduced Q-D for bombs in aircraft shelters by 60%.

Reduced Q-D for AGM-65, AIM-7/9, and AGM-82 missiles from 1,250 feet to between 400 feet and 500 feet.

Developed emergency Q-D for wartime storage of predirect munitions.

Eliminated Q-D for under 110 lbs 1.1 explosives in HASs.

Reduced Q-D for igloos containing less than 100,000 lbs NEW.

Reduced Q-D for AIM-7/9 missiles stored in AUR containers, based on propagation between containers.

Reduced Q-D between igloos and modules, and vice versa.

Reduced Q-D between shelters and munitions storage sites from K18/30 to K5/8.

Reduced 1.4 explosives Q-D from 80 feet to 50 feet.

Achieved approval for reduced Q-D between interservice facilities (from K40 to K11/18).

Established public traffic route distance for 1.2 explosives at 60% of inhabited building distance.

Reduced Q-D from igloos to aboveground magazines from K6 to K4.5.

Reduced Q-D from aboveground magazines to igloos from K6 to K4.

Reduced Q-D for igloos containing bombs, CBUs, and 20/30mm ammunitions from K1.25 to K1.1.

Explosion-proof fixtures are now required only where a hazardous atmosphere (explosives vapors, dust) exists. This is normally limited to laboratories, production facilities, or manufacturing activities. At operational Air Force units, the only environments which require explosion-proof fixtures would normally be areas where paint, solvent, or fuel vapors were present. However, all electrical installations in explosives facilities must meet host nation codes. In the case of the United Kingdom, we must meet the requirement for explosives-proof fixtures.

Proposed future tests included the following: (a) AGM-65 to reduce non-propagation spacing requirements, (b) test propagation distances and maximum credible event (MCE) of "ready use" munitions on trailers in igloos and in aircraft shelters with bulk munitions stores, (c) determine propagation probabilities of explosives bomb components separated from bomb bodies by bomb fins in a storage facility, (d) determine propagation probabilities between MK-82/-84 bombs and the MK-20 in storage, (e) test MK-20 to obtain 1.2 rating, (f) verify that AGM-45 and AGM-65 motor do not contribute to warhead explosion, (g) verify AIM-9 22-inch non-propagation distance, (h) conduct scale model aircraft shelter tests to reduce Q-D zones currently associated with them.

CURRENT SITUATION/INITIATIVES:

The USAFE Weapons Safety Program consists of both explosives and nuclear safety elements. Our program encompasses 20 MOBs, 76 COBs, 7 FOLs, 12 munitions support squadrons (MUNSS), and

2 GLCM sites. Our main base installations occupy an area smaller than Eglin AFB.

One of the major initiatives still supported by USAFE is the new Munitions Testing/Insensitive Munitions Program. The following USAFE-proposed tests are designed to determine, and where possible reduce, required separation distances: (a) HAS fragment hazard test to determine the amount of NEW it takes to destroy a HAS from an internal explosion and whether there are any munitions placement schemes able to be used to reduce the likelihood of large chunks of concrete from the resulting destruction, (b) development of insensitive munitions, (c) final testing and deployment of 40mm grenade carrying cases, (d) Lightning protection tests to determine the effect of lightning on a variety of munitions, (e) obtaining a larger variety of buffering materials for use in buffered storage arrays. (This is essential if buffered storage will have any value in a tactical environment.) and (f) munitions storage module--efforts are being made to obtain approved module designs and future maintenance cost comparisons to reduce costs of munitions igloo construction. USAFE is trying to work the problems, but, due to the SECAF freeze on construction, it is difficult to determine what the application of the answers will be. We need to develop sound procedures to gain concurrence with our proposals. To develop these procedures, we need logical, validated databases derived through commonly-determined test criteria. We need to properly plan explosives operations, and gain site plan approval before start of construction.

Since 1987, HQ USAFE/SEW has emphasized the need for an interface with NATO to help implement new concepts in explosives separation distance and resulting Q-D separations and to help establish a common ground of understanding. To date, the DDESB has taken the lead in presenting the U.S. views on explosives operations issues and criteria. However, theater participation as an advisor to DDESB on current operations in the command would benefit both USAFE and the DDESB. This is due to many differences of approach and assumptions in Q-D criteria. Some examples of country-to-country differences in standards or limitations resulting from them include the following:

> There are no USAFE airfields possessing the 3,200-foot explosives clear zone required by the U.S. for Durandal use without the DD-2 safety device.
>
> Base comprehensive plans in some countries were identified as a problem in 1985. Units were requested to identify those areas where clear zones entered off-base land, and to

identify any facilities that may have been within the clear zones.

Construction of facilities without approved explosives site plans has been a concern since at least 1986. HQ USAF/IG requested guidance on how to preclude funding for such projects prior to U.S. safety review and approval. Significant problems with explosives sitings were again addressed in 1988 by AFISC. It appeared that everyone thought there was no problem with the logic that "provision of these wartime facilities, at a reasonable price, was more important than perfection of their siting." This did not consider the "basic survivability and operability" of the facilities. USAFE then expressed concern for proper site planning and emphasized that enforcing proper Q-D was essential operationally. To date, many explosives plan packages (EPPs) remain to be approved by NATO-member command authorities. Some proposals have been made by member countries to expedite siting: site munitions igloos at a maximum of 45,000 kg NEW, base HAS NEW on operational needs, prevent violations of U.S. explosives safety criteria by basing allowable exercise NEW on distance to existing host facilities. Reduce the exercise NEW to keep the aircraft shelter loop "violation-free." These restrictions were acceptable to the USAFE staff; however, we expect continued problems of this type unless political questions not related to the siting can be resolved.

Explosives site plans were not developed and submitted early enough in the planning process. Often Q-D requirements were not adequately considered in initial planning and constrained the project. (See Tab 1.)

The U.S. basis for Q-D separation requirements is the MCE--the worst single event likely to occur in a given quantity and configuration of munitions. (See Tab 2.)

Waivers/exemptions (host nation and NATO exposures). Historically, and even today, the U.S.-NATO-host nation waiver/exemption process is complicated, lengthy, vague, and frustrating. Tab 3, "The U.S. Waiver/Exemption Process at COB Locations," could be streamlined if the process were standardized for all NATO countries.

> AC/258, Part I, para 101c, could be amended to process waivers/exemptions to NATO criteria in the same manner and at the same level as waiver/exemptions to AFR 127-100, provided the theater representative

coordinates with the host. The Commander-in-Chief (CINC) would then be able to approve an exemption meeting 75% of U.S. criteria, but not meeting 75% of NATO criteria.

When waterports are owned and operated by the host nation (reference criteria in DOD Standard 6055.9) we should recognize host rules. If there are none, we should conclude agreements stating how we will operate. Military Traffic Management Command simply manages the traffic and acts as a focal point for U.S. interests. Neither EUCOM nor component commands have any control over port operation or those of railheads. We must abide by the port's operating rules, and U.S. waivers have no impact because we are unable to reduce any risks (except by reducing the total NEW on-site at a given time). So long as we have done a current port survey, identified the risks, and notified the host of the risks, and the host nation has accepted them as consistent with their criteria, they will normally accept the associated risks.

Regardless of our successes in establishing valid Q-D separation requirements, we are still required to live by host nation and NATO standards in our explosives operations risking other than U.S. resources. In the past, many hosts have accepted our criteria; however, we must live by theirs until they accept ours, if theirs is more restrictive. (It is established in DOD Standard 6055.9, para 1a3, that we must apply the more restrictive of U.S. or NATO criteria to on-base or off-base exposures. The problem comes in when we seek to obtain host nation acceptance with the U.S. standard. Since neither NATO, nor the host nations recognize the primacy of U.S. public law or departmental administrative rules, the services in-theater are powerless to enforce U.S. criteria on an unwilling host.)

In some cases, in order to expedite action, we had to buy unacceptable facilities or beddown conditions when we put new missions into bare bases and are forced to accept unreasonable risk. For example, prior to 1982, explosives weights for facilities were computed on available distance to the nearest restricting resource. They were seldom based on warfighting requirements. "Exercise waivers" could be approved locally and were used to meet wartime tasking. They were not included in the database for base development; thus, real risk was not considered in base development. Facilities required to be abandoned or destroyed to get approval for

explosives facilities were not destroyed or abandoned. Real risk remained or increased. Facilities were sited for the current usage only. This often limited them to a single use in the future as well. Risk management actions such as hardening, controls on type and quantity of munitions, and dispersal of assets are now used to reduce separation distances.

HQ USAFE/SEW communications concerning a proposed MOB Secretary of the Air Force (SECAF) exemption, in November 1988, agreed with deletion of the proposed incremental public traffic route separation for aircraft generation facilities; inclusion of three phase or transitional siting in the new AFR 127-100, and use of U.S. criteria only if the host does not concur with the exemption. It noted that, especially in some NATO regions, processing times for the exemption may be greater than for normal sitings as host nation coordination is required for off-base areas. (All future U.S. overseas sitings should be done in such a way that all explosives clear zones fall within base boundaries. This would reduce the complexity and political sensitivity of negotiations.)

NATO philosophy does not recognize the HAS as a PES. However, this is not a critical difference since current wartime sortie generation taskings will not create sympathetic propagation as the NATO aircraft shelter survivability separation normally provides adequate protection. But, depending on aircraft load, aircraft survivability may be sacrificed as NATO does not differentiate between AFR 127-100, Tables 5-7 and 5-8, criteria. The chief impact of not considering the HAS as a PES for site planning purposes is to related or supporting facilities. If NATO adopted U.S. criteria, the present situation relative to HAS-to-HAS separation would remain unchanged as the NEWs of a number of shelters are limited due to surrounding resources. If adopted for future construction, U.S. criteria would provide a more dispersed relationship for the HAS and supporting non-explosives facilities, thereby optimizing maximum NEWs and protecting our supporting facilities.

Third generation HASs must meet the NATO separation of 60 meters between adjacent shelters and 100 meters center-to-center. U.S. distances are far less restrictive (except for the USAFE requirement to provide 300-foot separation side-to-side due to findings from Distant Runner). The most important siting features employed in NATO sitings are 60 meters edge-to-edge, 100 meters center-to-center, no more than 4 semihardened facilities or POL tanks in a line within 500 meters, 150 meters

from any HAS edge to a POL tank larger than 50 cubic meters, 15 meters from centerline of a taxitrack, 100 meters from centerline of a parallel taxiway, 150 meters from centerline to runway, 7-to-1 side slope from runway lateral clearance zone or parallel taxiway to lateral clearance zone.

U.S. forces deploying to COBs may be restricted from exercising with realistic weapons loads, especially where U.S. aircraft will be positioned in HASs with munitions. This is due to reduction of U.S. NEW to comply with U.S. standards. Where U.S.-titled munitions are employed, sitings must meet U.S. safety criteria. Actions taken concerning considering the HAS as a PES will be pretty much a CINC decision as USAFE and PACAF are the only places with the problem. This is a significant problem, since some MODs will not approve COB sitings and accept the U.S. SECAF COB exemption, which effectively allows exemption of U.S. Q-D separation requirements from U.S. munitions to host nation exposed sites to comply with less stringent host criteria.

The design variants of approved U.S./NATO HASs should have had Q-D criteria developed prior to actual EPP submittal and approval. The main differences should have been addressed and their inputs determined. Testing, after-the-fact is currently proceeding to develop empirical data needed for this evaluation.

The NATO Airfields Section has never considered explosives safety distances when siting HASs for combat aircraft despite the fact that the aircraft in them will be explosives-loaded. As a result, some may be built so close together or to other facilities as to render them operationally useless. The need to consider explosives Q-D was left out of original HAS requirements. Subsequent attempts to rectify the situation have been marginally successful, since there is a perception that safety considerations will require more land and increase costs. They also considered that increased costs would be an additional U.S. expense as the added costs would be national, rather than a NATO requirement. The NATO approach is to keep the HAS free of explosives during peacetime and waiver the requirements away in wartime. It should be noted that some host nations fully load their shelters regardless of NATO wishes once the HAS is constructed. However, many of the aircraft shelters occupied or planned to be occupied by the U.S. Air Force will shelter fully armed combat aircraft during peacetime and wartime. Without proper Q-D separation, secondary explosions may well propagate to other nearby shelters and result in the destruction of most or all of the combat aircraft located on-base. These limitations restrict their combat effectiveness.

In one case, a paper provided to the AC/258 storage subgroup meeting of 22 - 23 November, 1988, indicated one non-U.S. Air Force member will consider the protected aircraft shelter (PAS) to be a PES whenever an aircraft is parked there. It will be considered an explosives site (ES) to other areas where ammunition is stored. In a crisis, two aircraft ammunition loading cycles will be required in this country's PASs and, in wartime, provision of ammunition for aircraft ammunition loading cycles of one full day is the objective. This country also proposed that each nation should be responsible to establish regulations on explosives safety distance. But, they cannot agree to a modification of AC/128/D328 in the sense of not considering the PAS a PES/ES. According to this country's national regulations, only about 30% of its PAS are qualified for storage of live ammunition in crisis/wartime, because safety siting and construction of infrastructure were previously performed without duly observing the applicable explosives quantity safety distances. They are making every effort to improve this situation. Additional infrastructural requirements resulting from the explosives quantity safety distances established at national levels should, therefore, be funded nationally. For example, one MOD announced their intention to equip all new and existent HASs with an "in-shelter refueling system and provide them with emergency power." Up to four aircraft shelters are to be connected to a joint support facility. Design of the system will consider both weapons safety and survivability (weapons effects). The paper develops a weapons effects assessment based on direct hit probabilities from an attack.

Explosives sitings must ensure the best possible use of the available land by giving the best fit of facilities and do not necessarily increase project costs since siting does not impact on shelter design. They do, however, ensure consideration of survivability and operability. The NATO 100-meter and 60-meter HAS-to-HAS separation requirement for survivability is a partial recognition of this problem. Although several low-NEWed first generation HASs were converted to maintenance shelters which will be manned. Many were constructed solely for the purpose of maintenance, not for explosives. Working them through both historical recovery and change-of-use, they were sited under AFR 127-100, Tables 5-7 and 5-8, or were constructed by NATO without any explosives siting considerations. It was suggested to use K18 to the front doors and K9 to the sides and rear without a 300-foot minimum separation.

In some cases, the prior-to-site plan approval of introduction of munitions into storage has been done at the host's request.

HQ USAFE must respond quickly to a host's prefinancing. However, siting information for the specific type of facilities must be available. The siting criteria and location maps are needed. HQ USAFE/SEW has prohibited use of storage facilities until the siting approval could be worked out. This has been a joint HQ USAFE/SEW/DEN/LGW effort which also stopped future shipments there until the siting details can be worked out, and after-the-fact siting accomplished.

NATO and U.S. siting process work separately. (For COBs, the host nation is responsible for siting and conducting the safety review.) While AC/258 is used as the basis for siting, it does not address U.S. HAS or flightline rules and the host nation submits the funding request. The NATO philosophy for facility construction (provide only for current operational needs (wartime facilities), consider flightline areas as related facilities, differences with single nations) conflicts with U.S. and some NATO member nations' criteria.

Land availability. Many sites are no longer protected by easements (or servitudes, as they are called in Italy) for their storage areas' off-base exposures.

A problem for many COBs, and some MOBs, is the proximity of host nation munitions storage areas to U.S. munitions areas. In many cases, the host nation will not provide any information concerning the NEW and hazard class/division of its stored munitions, thus making it difficult for the U.S. munitions personnel to determine whether they have storage violations.

In some cases, two separate services using host nation land, but located on separate installations, have munitions storage areas located adjacent to each other, but separated by a public highway. Each is the target to the other, but since there is an intervening highway between them, the road is targeted by both of them since it is currently used by civilians. The problem in this case, is that the local community has grown accustomed to using the roadway, and although intended only for military use, the local police have become unwilling to restrict traffic, and the military police considered the road outside of their jurisdiction.

An enforcement mechanism such as COB siting boards is needed which stresses versatility in future wartime use for new construction. This body should be able to limit or preclude facility use during peacetime; promulgate bilateral agreements with host on safety requirements and establish joint criteria; obtain NATO siting approval prior to release of funds; establish

HAS as a PES. (This, however, is not a significant problem so long as the host nation recognizes the 300-foot HAS separation requirement.)

We need to identify the proper EUCOM/SACEUR point of contact through which to work the problem as a theater-wide action once we have defined it properly. We can then limit or prevent use of the facility until it is properly sited and approved. HQ USAFE/SEW proposed beginning acquisition of required land to enable ourselves to comply with the AFR 127-100 requirements. Regardless, the CINC must make official notification to NATO that HASs for U.S. combat aircraft must be sited for explosives. In NATO's view, only a CINC's input will be paid attention to since, in their view, no other U.S. agency or individual has the right to input a requirement in this area to NATO. Even though only COBs remain to be built, we should employ proper site planning there for the same reasons as we employ proper site planning at our MOBs--survivability and operability.

A working group was formed in 1988 to discuss and address differences in U.S. and NATO siting criteria and to identify the problems this caused. This group has been recently reactivated to address other siting issues, to identify construction projects and their funding status, and to recommend how these would be controlled. HQ USAFE/SEW continues to work to be included in preliminary review of joint projects in order to ensure projects do not begin until approved by DDESB or they have SECAF safety exemption approval if problems exist. (See Tab 4, "Project Review Procedures.") In order to accomplish these objectives, we participate in a variety of joint U.S./host nation munitions working groups.

CONCLUSION/FUTURE PROJECTIONS:

The solution in establishing commonly-agreed safety criteria in NATO is to improve our risk identification program so we can implement a good risk management program. First, we must identify the hazards and the potential dangers inherent in our existing operations, evaluate the impact to surrounding operations/facilities, and tie the analysis together to see how we can minimize or manage risks while still accomplishing the assigned mission effectively.

We must analyze all of our operations including base closures where operations presently covered by waiver or exemption may have had construction programmed against them to fix the exposure. With the known base closure list out, many of these

projects will be cancelled. Do we need to extend the waivers to maintain the coverage? Some other elements to consider are:

Determine the impact of not considering the HAS as a PES, so long as the 300-foot hazard protection zone applies.

Evaluate the site plans for each COB/MOB to determine how may HASs are not separated by 100 meters side-to-side. If all sites have the 100-meter separation, there should be enough protection to store minimum mission-essential NEWs.

If the 300-foot hazard protection zone is adequate to provide minimum Q-D for two sortie loads prepositioned, plus one on the aircraft, there is no problem.

As collocation becomes an issue with "the vault in the HAS" concept, there may be no alternative but to consider the HAS as a PES, but there may be no impact if the 300 feet provide adequate Q-D separation as well as adequate hazard protection. In fact, the in-HAS vault may open the door for more in-HAS storage or conventional munitions in vault-type arrangements. Mini-vaults inside igloos could eliminate the need for munitions storage/igloos/areas, thus providing more space for greater separation between flightline and other base activities.

Performing bomb build-up inside igloos may provide a survivability measure. However, in-igloo build-up may not allow for effective operations due to cramped working conditions. Since munitions maintenance personnel prefer outside build-up, we may need to develop more efficient in-igloo bomb build-up procedures and equipment or develop other types of survivable bomb assembly facilities.

Approve the measures to allow peacetime storage of complete round bombs in tasked combat configuration. However, the question of service life testing for bomb components, particularly fuzes, must be addressed in order to minimize unnecessarily high inspection requirements. This testing is needed to allow better data for decision-making on whether to pre-build greater quantities of bombs, to thereby enhance storage, safety, and operational readiness. AUR storage may be only a good measure if war is imminent, not a day-to-day peacetime measure. Developing workable procedures now will help ensure the capability to generate the numbers of munitions needed to support potentially-high future conflict sortie rates. AUR storage violates some national

compatibility laws. This also points up need for mutually-agreed-upon criteria.

In conclusion, we have overcome many problems, have identified many more, and need to continue the positive cooperative efforts we have begun. So long as we conduct joint operations in support of NATO commitments, we must develop mutually acceptable or standardized approaches to controlling or limiting the hazardous impacts our explosives create in our total operations.

THE U.S. EXPLOSIVES SITE PLANNING PROCESS

If U.S. Q-D standards cannot be met where host country requirements are less stringent, an exemption signed by the SECAF is required. Therefore, a long lead-time action is required after funds become available. Therefore, actions were directed to perform the following:

Identify all construction projects that need explosives site plans early.

Determine user needs at start of siting process and determine if secretarial exemption will be required to meet those needs.

Obtain weapons safety advise as soon as it is known that an explosives site plan is required.

Establish and monitor project milestones at civil engineers.

Submit the explosives site plan at the 35% design stage.

Identify projects past the 65% design which do not have explosives site plan approval and contact concerned agencies if required.

Validate project and explosives site plan data at the 95% design review. Amend project/site plan as required and process the amendment through proper channels.

Ensure the validated/amended site plan is approved and restrict construction start until approval is confirmed.

Actions taken HQ USAFE/DOQ/XPX/XPP all may affect employment concepts, commitments, and munitions storage requirements for current and future USAFE units.

TAB 1

MAXIMUM CREDIBLE EVENT RATIONALE

Previously Department of Defense-based MCE on the assumption that all munitions at a single location would explode at the same time.

USAFE questioned the old MCE assumptions through a series of tests representing actual situations. One problem area was the danger posed from fragments of the HAS as it broke up in an explosion. Due to this danger, a 300-foot safe zone was established around the shelter. Tests were proposed to position munitions differently inside the shelter to ameliorate the effects of an explosion, and reduce probability of sympathetic explosions. Placing bombs at an angle of 15 degrees from the side wall of the shelter reduced exposure to the other munitions to the point that propagation would not occur. This was demonstrated to reduce the MCE to three bombs when loaded on a TER, or to one, when suspended individually. This reduced Q-D from 895 feet to 525 feet. Another problem in a storage environment is that we "Q-D out" before we "cube out," normally in USAFE due to exposure to a critical resource or civilian exposure which should not be placed at risk.

Efforts to use inert components or less sensitive munitions as buffers/barriers to reduce sympathetic detonation were made.

Along with buffers, positioning was used as a means of reducing propagation, along with positioning, bomb configuration was also determined to be important; i.e., the need to keep fuze wells closed with either a metal end plate of a fuze. (According to tests made using a variety of munitions, current fuzes can effectively withstand blast overpressures and fragments of an explosion of 21,000 lbs NEW.

Using the buffered storage principle, and with proper storage planning, we could effectively more than double our NEW storage capacity in existing igloos.

TAB 2

THE U.S. WAIVER/EXEMPTION PROCESS AT COB LOCATIONS

			PES			
			U.S.		HOST	
			AMMO IGLOO	FLIGHTLINE	AMMO IGLOO	FLIGHTLINE
ES	U.S.	AMMO IGLOO	AFR 127-100 CRITERIA WAIVER/EXEMPTION	AFR 127-100 CRITERIA WAIVER/EXEMPTION	* #	* # HOST HAS NO CRITERIA @
		FLIGHTLINE	AFR 127-100 CRITERIA WAIVER/EXEMPTION	AFR 127-100 CRITERIA WAIVER/EXEMPTION	* #	* # HOST HAS NO CRITERIA @
	HOST	AMMO IGLOO	MOST RESTRICTIVE COB SECAF EXEMPTION &	MOST RESTRICTIVE COB SECAF EXEMPTION &		
		FLIGHTLINE	MOST RESTRICTIVE COB SECAF EXEMPTION &	MOST RESTRICTIVE COB SECAF EXEMPTION &		

* There is no sure way to know what the host nation will store in terms of NEW.
1. We must work from unknown quantities if the host will not disclose the information.
2. A host may have a waiver or exemption program that allows an increase in NEW without any requirement to notify us.
3. Countries without criteria may just ignore the amounts they store.
4. There is no integration of an approval process for site plans or exemptions from a host country to the U.S.

\# Minimum criteria to prevent propagation is intermagazine (IM). The host may not have the same IM criteria.

& Three sources of criteria:
1. AC/258.
2. Host criteria, if applicable.
3. AFR 127-100.

@ This is typical for most of the countries. NATO does not recognize the HAS as a PES.

TAB 3

PROJECT REVIEW PROCEDURES

Ensure a preliminary explosives safety review of all NATO construction projects for facilities to be used for U.S. titled munitions command-wide. (This review occurs prior to the "Type B" estimate to our NATO counterparts.)

Stop construction on NATO projects until DDESB approval is received or SECAF exemptions are approved. (This is essentially outside our control if it is a NATO-funded project.)

HQ USAFE/DE provides a computer listing of all known NATO construction projects. These procedures were designed to preserve mission capability and to fulfill U.S. requirements as well as those of NATO.

TAB 4

WHAT CAN BE DONE TO CORRECT/MANAGE THE PROBLEMS

We must encourage the conscientious analysis of risk at the senior manager level so that options allowing achievement of mission objectives most safely are selected.

We must have the energy, resolve, and intelligence to enforce established restrictions.

Long-term solutions center on improved aircraft shelter design, development of an IHE, and land acquisition.

Establish realistic clear zones based on anticipated munitions loads.

Use inert bombs with live fuzes and adapter boosters when possible.

Designate low NEW-authorized shelters for CBU and missile operations.

Use petroleum oil lubricant (POL) shelters for forward storage of CBUs and missiles.

Use shelters with good unwaivered capacity for forward storage of bombs.

Separate AIM-7/9 missiles to prevent propagation.

Place CBU and missile trailers in shelters to eliminate Q-D requirements.

Separate AGM-65 maverick missiles by 130 inches to prevent propagation. (Two missiles will cause extensive concrete spalling.)

Support storage of munitions in HASs. This procedure should be allowed so long as storage of GP bombs is along one HAS wall at a 15-degree angle, with 4-foot separation between MK-84s and other bombs, and 30-inch separation between MK-20 and MK-82s. The NEW of all bombs need not be added together. The shelter NEW for a loaded aircraft with additional weapons in storage becomes the total of BRUs/MERs on one wing (for all aircraft except A-10 and F-4. On these aircraft, the total load on both wings is used. The NEW for MK-84s is the total NEW of all stations. For all munitions, whenever centerline carriage is used, total NEW for all stores on the aircraft should be considered. When munitions are stored in HASs, plans must outline procedures to deal with

electromagnetic radiation hazards from aircraft to munitions and to control dangers from forward-firing ordnance.

TAB 5

TWENTY-FOURTH DOD EXPLOSIVES SAFETY SEMINAR

OUTLINE

SECTION I. BACKGROUND

A. MISSION ENLARGEMENT DURING THE 1980'S

1. INCREASE IN RESPONSE TO PRESIDENT REAGAN'S EMPHASIS

(A) LARGER NUMBER OF TACTICAL FIGHTER SQUADRONS

(B) EMPHASIS ON FORWARD DEPLOYMENT/PREPOSITIONING

B. CONSTRUCTION/FACILITIES EXPANSION (NATO AND U.S.)

1. Q-D NOT ALWAYS CONSIDERED IN INITIAL PLANNING

2. EXPLOSIVES SITE PLANS SUBMITTED BEFORE CONSTRUCTION START

(A) JOINT SAFETY-CIVIL ENGINEER PROCEDURES ESTABLISHED TO IDENTIFY AND PLAN CONSTRUCTION (1985)

(B) EXPLOSIVES SITE PLANS SUBMITTED AT 35% DESIGN STAGE

(C) EXPLOSIVES SITE PLAN APPROVAL/REVIEW POINTS CHANGED TO HQ AFISC/SEWV AND DDESB RATHER THAN HQ USAF/LEYW/LEEV

C. GROWTH OF COBS

1. CONSTRUCTED USING NATO FUNDS/HOST CRITERIA

(A) HQ USAFE/DEN/DEP/SEW WORKED TO CONTROL SITING

(B) NO NATO FLIGHTLINE Q-D SITING REQUIREMENTS INITIALLY--RELIED ON HOST CRITERIA (SOME COUNTRIES HAVE NO CRITERIA)

(C) WAIVERS AND EXEMPTIONS INCREASED FROM 64 IN 1977 TO OVER 800 IN 1985

(D) SOME HASS BUILT WITH VERY LOW OR NO NEW CAPABILITY

2. USAFE EXPLOSIVES WORKING GROUP ESTABLISHED (TEMPORARY BODY)

(A) ATTEMPTED TO RECONCILE U.S. WITH NATO BASING CONCEPTS (ACCOMMODATE PERSONNEL REQUIREMENTS AS WELL AS MISSION REQUIREMENTS IN AIR BASE AREA)

(B) EVALUATED SITES FOR COB LOCATIONS. LGW NOTES CURRENT SECAF-DIRECTED CONSTRUCTION FREEZE MAY TEMPORARILY CONSTRAIN COB GROWTH

(C) COORDINATED EXPLOSIVES SITINGS AND SITE STOCKPILE

(D) WORKED TO RESOLVE DIFFERENCES IN U.S./NATO/HOST CRITERIA

C. EXPANSION OF PREPOSITIONING

1. EFFORTS BEGUN TO INCREASE NUMBER OF DAYS OF SUPPLY AT MOBS AND COBS

(A) MUNITIONS CALLED FORWARD FROM CONUS/MMS(T)S

(B) STORAGE CONFIGURATIONS GEARED TO COMBAT SORTIE TASKING

2. EXISTING MUNITIONS STORAGE IGLOO SPACE INADEQUATE

(A) NEW STORAGE CONFIGURATIONS PROPOSED

(B) NEW STORAGE CONCEPTS (STRUCTURES) PROPOSED

D. LACK OF REAL ESTATE

1. OFF-BASE EXPOSURES CREATED

(A) RESTRICTIVE EASEMENTS ESSENTIAL

(B) HOST NATIONS GENERALLY WILLING TO ACCEPT EXPOSURES

(C) SECAF EXEMPTION FOR COBS/FOLS

2. ON-BASE EXPOSURES CREATED

(A) U.S.-TO-U.S.

(B) U.S.-TO-HOST

(C) WHAT CONSTITUTES A RELATED FACILITY

3. MUNITIONS TESTING PROGRAM CRITICAL

(A) HELPED REDEFINE Q-D RELATIONSHIPS/VALIDATE DISTANCE

(B) REDUCED Q-D SEPARATION REQUIREMENTS FOR 19 DIFFERENT MUNITIONS ITEMS/OPERATIONS

(C) PROPOSED "HAVE BLOCK" AND "BUFFERED STORAGE" AS MEANS TO REDUCE MAXIMUM CREDIBLE EVENT (MCE)

(D) PROPOSED LOWER COST STORAGE FACILITIES ABLE TO MULTIPLY STORAGE SITES AT LOWER UNIT NET EXPLOSIVES WEIGHT (NEW)

E. NATO GUIDANCE (AC/258, D/258)

1. MUNITIONS STORAGE AREA (MSA)

(A) NATO GUIDANCE MORE RESTRICTIVE THAN U.S.

(B) WHAT IS RELATED? U.S.-TO-HOST, HOST-TO-U.S., AND U.S. REGULATIONS NOT CLEAR

2. AIRCRAFT DISPERSAL AREA

(A) SHAPE DOES NOT RECOGNIZE A HAS AS A PES

(1) MUNITIONS ARE TRANSIENT

(B) NATO SURVIVABILITY SEPARATIONS ARE EQUIVALENT TO U.S. Q-D CRITERIA IN MANY CASES

(C) NATO SURVIVABILITY CRITERIA

F. HOST CRITERIA

1. RULES OF THUMB

(A) MSA

(1) BE, DK, GE, NL, DO, AND UK--EQUIVALENT OR MORE RESTRICTIVE THAN U.S.

(2) GR, IT, AND TU--LESS RESTRICTIVE THAN U.S.

(B) AIRCRAFT DISPERSAL AREA--HAS, NOT A PES

G. INTEGRATION

1. CHAPTER 32 CODE OF FEDERAL REGULATIONS

(A) REQUIRES MOST RESTRICTIVE OF HOST OR DOD STANDARD 6055.9 AS MINIMUM COMPLIANCE FOR DOD COMPONENTS

(B) WHAT IF HOST COUNTRY EXPOSES THE U.S.-BASED ONLY ON U.S. CRITERIA

2. INTERNATIONAL AGREEMENTS VAGUE

(A) "APPLICABLE REGULATIONS/REQUIREMENTS"

(B) WHAT IF HOST DOES NOT RECOGNIZE U.S. CRITERIA

3. ALLIED COMMAND EUROPE DIRECTIVE 85-1

4. REALITY

(A) COMMON CRITERIA DESIRED, BUT UNLIKELY

(B) U.S. CRITERIA WILL BE USED VIA EXEMPTIONS, WAIVERS, AND LIMITATIONS ON OPERATIONS

H. EVOLUTION OF HARDENED AIRCRAFT SHELTERS AND CRITERIA

1. FRENCH/U.S. TAB VEES

(A) CONSTRUCTED TO PROTECT AIRCRAFT IN OPEN PARKING SPOTS

(B) CRITERIA USED SAME AS FOR WEAPON LOADED AIRCRAFT IN OPEN PARKING SPOT

2. SECOND AND THIRD GENERATION HARDENED AIRCRAFT SHELTERS

(A) HAS LARGER AND MORE VERSATILE THAN TAB VEES

(B) ATTEMPTED TO USE AS PROTECTED LOADING SITE WITH ONE-TO-TWO SORTIES OF MUNITIONS IN EACH

(C) DISTANT RUNNER TESTS IDENTIFIED NEED FOR SEPARATION AT NEWS ABOVE 110 LBS 1.1

3. OVERCOMING NEW LIMITATIONS BY CONTROLLING MCE

(A) ANGLING MUNITIONS AT 15 DEGREES ALONG ONE WALL

(B) USE FULLY-FUZED MUNITIONS AT MINIMUM SEPARATION DISTANCES

4. FURTHER TESTING REQUIRED TO DETERMINE MCE AT WHICH HAS PRODUCES FRAGMENTS IN INTERNAL EXPLOSION

I. **MUNITIONS TESTING/QUANTITY-DISTANCE VALIDATION**

1. NATO CONCERNED DUE TO UNECONOMIC USE OF LAND CAUSED BY OVER-CONSERVATIVE Q-DS BASED ON IMPRECISE DATA

(A) NATO WORKING PAPER (AC/258-WP/48 (REVISED)), SEP 88, SOUGHT AGREEMENT IN PRINCIPLE TO FUND TESTS TO VALIDATE THE Q-D FOR A VARIETY OF AMMUNITION AND EXPLOSIVES

(B) TESTING COULD BE SPONSORED BY INFRASTRUCTURE COMMITTEE

2. U.S. CONCERNED DUE TO LIMITATIONS ON MISSION CAPABILITY IN A LAND-POOR ENVIRONMENT AND TO ENHANCE AIR BASE OPERABILITY

(A) SEVERAL EFFORTS BEGUN IN 1983. HAVE BLOCK MOST PROMISING, BUT IMPRACTICAL. LED TO BUFFERED STORAGE. BUFFERED STORAGE FINE FOR A WRM ENVIRONMENT, BUT NOT DESIRABLE FOR MOBS (LGW INPUT)

(B) USAFE PROPOSED 16 TESTS IN 1985

(C) FINDINGS FROM DISTANT RUNNER TESTS ALLOWED 19 Q-D SEPARATION REDUCTIONS OR TOTAL ELIMINATION OF SEPARATION REQUIREMENTS--IMPROVED HAS OPERATIONAL EFFICIENCY

(D) MANY USAFE TESTS PROPOSED STILL PENDING COMPLETION

J. DEVELOPMENT OF STANDARD FACILITIES

1. IMPORTANT FOR SITE PLANNING CONSIDERATIONS

2. FIVE TYPES OF STRUCTURES STANDARDIZED FOR NATO USE: THREE GENERATIONS OF HASS, READY SERVICE IGLOOS, AND READY SERVICE MAGAZINE

3. TWO TYPES BEING CONSIDERED--NORWEGIAN AND GERMAN HAS

4. NATO WORKING PAPER AC/258 (ST)WP/158 ADDRESSED THE NEED FOR AN ANNEX TO THE STORAGE MANUAL TO CAPTURE HAS DATA SIMILAR TO THAT FOR IGLOO DATA

SECTION II. CURRENT INITIATIVES

A. RISK ASSESSMENT/CONTROL

1. COMMAND-WIDE EFFORT INITIATED TO REVIEW EXISTING WAIVERS, EXEMPTIONS, AND DEVIATIONS IN LIGHT OF MISSION CHANGES

(A) TOOL FOR COMMANDER TO REASSESS EXPLOSIVES OPERATIONS

(B) ANALYZES RISK INVOLVED IN EXPOSURES CREATED BY NEW CONSTRUCTION/MODIFICATION, AND CHANGES OF USE OF FACILITIES WITHIN EXPLOSIVES CLEAR ZONES

(C) PUTS SAFETY INTO THE BASE PLANNING PROCESS

2. ENSURE THE COMMANDER IS APPRISED OF THE RISKS INHERENT IN WING OPERATIONS

3. PROVIDES ON-GOING REVIEW OF WAIVERS AND EXEMPTIONS

4. PROVIDES PLANNING BASIS FOR MISSION-RELATED (THREE PHASE) SITING

B. LIGHTNING PROTECTION FOR OUTSIDE STORAGE

1. COMMAND ASSESSMENT COMPLETED IN EARLY 1989

(A) ESTIMATED COST TO COMPLY WITH INSTALLATION OF LIGHTNING PROTECTION FOR OPEN MUNITIONS PADS IS WELL ABOVE $2 MILLION

(B) SOME HOST NATIONS OPPOSE USE OF LIGHTNING PROTECTION SYSTEMS

(C) FREQUENCY OF MANNED OPERATIONS NEEDED TO BE CONDUCTED IN THE OPEN NEEDS TO BE DETERMINED

(D) COST TO COMPLY MAY BE PROHIBITIVE BASED ON MISSION REQUIREMENTS

2. USAFE PROPONENT FOR LIGHTNING PROTECTION TEST

(A) DETERMINE IMPACTS OF LIGHTNING STRIKES ON VARIOUS MUNITIONS ITEMS

(B) DEVELOP EMPIRICAL DATA TO DETERMINE IN WHAT ENVIRONMENTS LIGHTNING POSES A HAZARD TO MUNITIONS

(C) TESTS FEASIBLE, BUT ON-HOLD PENDING DETERMINATION OF INSENSITIVE MUNITIONS PROGRAM

C. IN-IGLOO MUNITIONS BUILD-UP

1. PROVIDES PROTECTED ENVIRONMENT DURING ATTACK CONDITIONS

(A) ECONOMICALLY AFFORDABLE ALTERNATIVE TO DEDICATED BOMB ASSEMBLY BUILDINGS

(B) BACK-UP BOMB ASSEMBLY POINTS IN EVENT DEDICATED BOMB ASSEMBLY BUILDING DESTROYED

2. REDUCES BOMB ASSEMBLY TIME BY POSITIONING REQUIRED COMPONENTS IN A SINGLE STRUCTURE

3. EFFECTIVELY UTILIZES MANPOWER REQUIRED DURING CRITICAL SORTIE SURGE PERIODS

4. REDUCES TRAFFIC IN MUNITIONS STORAGE AREA AND MAKES EQUIPMENT AVAILABLE TO SUPPORT FLIGHTLINE DELIVERY

D. ALL-UP-ROUND MUNITIONS STORAGE

1. PROCEDURES APPLICABLE TO SELECTED COBS AND MOBS

2. APPLIES TO ENCASED MUNITIONS ONLY, NOT TO BULK EXPLOSIVES

3. PUTS MUNITIONS INTO OPERATIONAL CONFIGURATION REQUIRED BY AIR ORDER OF BATTLE

   (A) OFFSETS MANPOWER SHORTAGES TO MEET EARLY-ON TASKINGS

   (B) PROVIDES SURVIVABILITY BY DISTRIBUTING ASSETS

   (C) MINIMIZES EXPOSURE OF PERSONNEL AND EQUIPMENT

4. ALLOWS RESUPPLY AND PREDIRECT TO BE BUILT AT RECEIPT SITE AND DIRECT-DELIVERED TO THE FLIGHTLINE OR RESTORED DEPENDING ON THE SITUATION

5. TAKES ADVANTAGE OF STORAGE AUTHORIZATIONS FOR STAMP/ FASTPAK

6. SOLVES THE PROBLEM OF "TRASH" DURING TIME-SENSITIVE BOMB BUILD-UP OPERATIONS

7. REDUCES LIKELIHOOD OF ASSEMBLY ERRORS

8. PROVIDES AN ENVIRONMENT IN WHICH PROPAGATION IS LESS LIKELY THAN IF COMPONENTS ARE UNASSOCIATED

E. IN-HAS MUNITIONS STORAGE WILL:

1. ALLOW PLACEMENT OF MUNITIONS EITHER ALONG HAS WALLS OR WITHIN A VAULT/CASKET INSIDE HAS

2. PROVIDE INCREASED SECURITY

   (A) DISPERSES ASSETS INTO A MORE SURVIVABLE ENVIRONMENT

   (B) REDUCES LIKELIHOOD OF TERRORIST/HOSTILE ACCESS

   (C) INCORPORATES VISUAL AND OTHER ALARM SYSTEMS

   (D) ELIMINATES NEED FOR CONVOY/MOVEMENT

3. ENHANCES MISSION ACCOMPLISHMENT

   (A) PROVIDES PROTECTED ENVIRONMENT FOR BREAKOUT/ BUILD-UP

   (B) ALLOWS EASY TRANSITION TO HIGHER INTENSITY OPERATIONS

(C) PROVIDES PROTECTED ENVIRONMENT FOR AIRCRAFT LOADING

(D) ALLOWS FULL-RANGE OF OPERATIONS WITHOUT EXTERNAL VIEW

F. THREE PHASE (TRANSITIONAL) SITE PLANNING

1. DERIVED FROM SECAF COB/FOL EXEMPTION TO CONTROL EXPOSURES

2. BASED ON TRADITIONAL RULES OF RELATED FACILITY SEPARATION

3. REQUIRES DETAILED MISSION ANALYSIS OVERLAID ON BASE CAPABILITY

4. MAXIMIZES FACILITY USAGE

5. MINIMIZES LAND ACQUISITION TO ACHIEVE Q-D SEPARATION

6. REQUIRES WINGS/BASES TO DEVELOP A FACILITY USAGE/ TRANSITION PLAN TO SUPPORT THE EXPLOSIVES SITE PLAN

7. ALLOWS PLANNERS TO EXERCISE NEEDED CONTROL WHILE PRESERVING REQUIRED SAFETY SEPARATION DISTANCES

G. PROPOSED COMMON EUCOM STANDARDS FOR OFF-BASE ACTIVITIES WILL:

1. IMPLEMENT U.S. PUBLIC LAW REQUIREMENT TO SITE ALL EXPLOSIVES OPERATION SITES

2. ELIMINATE CONTRADICTIONS CAUSED BY SERVICE-UNIQUE REQUIREMENTS WHEN DEALING WITH HOST GOVERNMENTS

3. RECOGNIZE THAT FEW EUROPEAN PORTS/RAILHEADS CAN BE SITED RISK-FREE (INTERNATIONAL SHIPPING ORGANIZATION (ISO) CONTAINERS HAS SHOWN BENEFITS OVER BLOCKING-AND-BRACING REQUIREMENTS IN THAT IT SAVES TIME THROUGHOUT OPERATION)

(A) ALLOWS HOST COUNTRY INPUT INTO DETERMINING SITES

(B) ALLOWS HOST COUNTRY STANDARDS TO INFLUENCE AUTHORIZED NEWS AND PROCEDURES

4. RATIONALIZE THE NEGOTIATION PROCESS BY ESTABLISHING A SINGLE POINT OF CONTACT FOR ALL WATERPORTS AND RAILHEADS AND LETS THAT POINT OF CONTACT SUPPORT ALL USER SERVICES

   (A) REDUCES CONFUSION AS TO WHICH SITES ARE APPROVED

   (B) IMPROVES PLANNING BY ESTABLISHING A LISTING OF SITES AND THEIR CAPACITIES

   (C) DEMONSTRATES U.S. INTENT TO BE A POSITIVE PARTNER

H. DEVELOPMENT OF STANAGS WILL:

1. DEFINE STANDARDS/CRITERIA TO IMPROVE PLANNING AMONG NATO MEMBERS

   (A) ELIMINATES THE PROBLEM OF USER NATION RULE CONFLICTS ON HOST NATION BASES

   (B) PROVIDES A BASIS OF AGREEMENT ON SITING STANDARDS

   (C) CAN ADDRESS A VARIETY OF SUBJECTS

2. CREATE STANAGS FOR:

   (A) EXPLOSIVES SITING FOR RAILHEADS AND WATERPORTS

   (B) EXPLOSIVES SITING OF FLIGHTLINE FACILITIES, SUCH AS HASS, AIRCRAFT PARKING SPOTS, HOLDING AREAS, AND HOT CARGO PADS

   (C) DEFINING THE DESIGNATED ACCEPTANCE LEVEL WITHIN EACH MEMBER GOVERNMENT FOR A VARIETY OF EXPLOSIVES SITING ACTIONS

   (D) DETAILING REAL ESTATE ACQUISITION AND USAGE CONTROL

   (E) AUTHORIZED MUNITIONS STORAGE CONFIGURATION/ LOCATIONS

   (F) TRANSPORTATION OF MUNITIONS ON PUBLIC TRANSPORTATION SYSTEMS (CURRENTLY UNDERTAKEN BY USAREUR)

I. INSENSITIVE MUNITIONS PROGRAM

1. EFFORTS BEING MADE TO COMBINE THE INSENSITIVE HIGH EXPLOSIVES PROGRAM AND MUNITIONS TESTING PROGRAM

(A) CREATE A SINGLE PROGRAM UNDER MSD/YQI

(B) CREATE A MULTI-DISCIPLINE EXPLOSIVES OPERATIONS CENTER AT EGLIN AFB

(C) PROMULGATE STORAGE CONCEPTS AND FACILITIES BASED ON TEST DATA

(D) COMBINE SAFETY, MAINTENANCE, CIVIL ENGINEER, AND OPERATIONAL REQUIREMENTS INTO AN EXPLOSIVES DISCIPLINE

2. REMAINING TESTS IMPORTANT FOR USAFE OPERATIONS:

(A) DEVELOPMENT OF INSENSITIVE HIGH EXPLOSIVES FILLER

(B) TEST TO DETERMINE IMPACTS OF LIGHTNING STRIKES ON INVENTORY MUNITIONS

(C) QUALIFICATION OF ADDITIONAL BUFFERING MATERIALS (FOR BUFFERED STORAGE) ABLE TO BE CONSUMED IN THE BOMB GENERATION PROCESS

(D) QUALIFICATION OF DESIGN FOR HARDENED MUNITIONS GENERATION (BUILD-UP) FACILITY

(E) QUALIFICATION OF DESIGN FOR MODULAR MUNITIONS STORAGE STRUCTURE

(F) HAS SCALE MODEL TEST

(G) FRAGMENT HAZARD TEST

SECTION III. CONCLUSION

A. FUTURE PROJECTIONS

1. MUNITIONS POSITIONING CONCEPTS AT COBS

2. REDUCTION OF IN-THEATER MUNITIONS MAINTENANCE PERSONNEL

3. REDUCTION IN NUMBER OF MOBS

4. REDUCTION IN AIRFRAMES

5. INCREASED RELIANCE ON NATO FOR MISSION SUPPORT

6. MISSION REALIGNMENTS

7. MUNITIONS RELEVELING/REDISTRIBUTION MOVEMENTS

8. WE NEED TO CAREFULLY ANALYZE OUR OPERATIONS TO MAXIMIZE THEIR EFFICIENCY, REDUCE COSTS, MAINTAIN RAPID AND IN-DEPTH RESPONSE CAPABILITY

9. MUNITIONS POSITIONING WILL CONTINUE AT REMAINING COBS. COBS CLOSED WILL CONTAIN NO MUNITIONS. SOME ALTERNATIVES TO FEWER USAFE MUNITIONS PERSONNEL ARE INCREASED HOST NATION SUPPORT, CONUS DEPLOYMENTS, ETC. MOST WRM PERSONNEL MUST BE RETRAINED IF WRM STOCKS WILL BE MAINTAINED IN-THEATER. MUNITIONS ARE BEING MOVED AS BASES ARE BEING CLOSED.

DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY SYMPOSIUM

HQ USAFE/SEW

EXPLOSIVES SAFETY IN THE NATO ENVIRONMENT

VU-1

OVERVIEW

- BACKGROUND
- CURRENT INITIATIVES
- CONCLUSION/FUTURE PROJECTIONS

VU-2

BACKGROUND

- MISSION ENLARGEMENT DURING THE 1980'S
- CONSTRUCTION/FACILITIES EXPANSION (NATO AND U.S.)
- GROWTH OF COBS
- LACK OF REAL ESTATE
- DEFINITION OF HOST NATION/NATO SITING CRITERIA
- EVOLUTION OF HARDENED AIRCRAFT SHELTERS AND CRITERIA
- MUNITIONS TESTING/QUANTITY-DISTANCE VALIDATION

VU-3

DIFFERENCES IN CRITERIA

- NATO GUIDANCE
- HOST CRITERIA
- INTEGRATION

VU-4

OVERVIEW:
CURRENT INITIATIVES

- RISK ASSESSMENT/CONTROL
- INSENSITIVE MUNITIONS PROGRAM
- DEVELOPMENT OF STANAGS
- COMMON IN-THEATER SITING STANDARDS FOR OFF-BASE ACTIVITIES
- IN-IGLOO MUNITIONS BUILD-UP
- ALL-UP-ROUND MUNITIONS STORAGE
- THREE PHASE (TRANSITIONAL) SITE PLANNING
- IN-HAS MUNITIONS STORAGE
- LIGHTNING PROTECTION FOR OUTSIDE STORAGE

VU-5

CONCLUSION:
FUTURE PROJECTIONS

- MUNITIONS POSITIONING CONCEPTS AT COBS
- REDUCTION OF IN-THEATER MUNITIONS MAINTENANCE PERSONNEL
- REDUCTION IN NUMBER OF MOBS
- REDUCTION IN AIRFRAMES
- INCREASED RELIANCE ON NATO FOR MISSION SUPPORT
- MISSION REALIGNMENTS
- MUNITIONS RE-LEVELING/REDISTRIBUTION MOVEMENTS
- WE NEED TO CAREFULLY ANALYZE OUR OPERATIONS TO MAXIMIZE THEIR EFFICIENCY, REDUCE COSTS, MAINTAIN RAPID AND IN-DEPTH RESPONSE CAPABILITY

VU-6